

WE CLAIM:

1. A stabilized ester peroxycarboxylic acid composition comprising an ester peroxycarboxylic acid and C₂ or higher alcohol effective for stabilizing the ester peroxycarboxylic acid at non-toxic concentration of the C₂ or higher alcohol.

2. The composition of claim 1, wherein the C₂ or higher alcohol comprises ethanol, isopropanol, n-propanol, n-butanol, isobutanol, tert-butanol, pentanol, glycerol, propylene glycol, butylene glycol, hexylene glycol, glycerine, polyethylene glycol, polypropylene glycol, polybutylene glycol, or a combination thereof.

3. The composition of claim 1, comprising about 0.5 wt-% to about 80 wt-% C₂ or higher alcohol.

4. The composition of claim 1, further comprising a surfactant.

5. The composition of claim 4, wherein the surfactant comprises an alkylbenzene sulfonic acid, an amine oxide, an alkyl sulfonate, an aliphatic alcohol ethoxylate, or a mixture thereof.

6. The composition of claim 1, further comprising a buffer.

7. The composition of claim 6, wherein the buffer comprises citric acid, citrate salt, phosphoric acid, phosphoric acid salt, succinic acid, succinic acid salt, adipic acid, adipic acid salt, glutaric acid, glutaric acid salt, acetic acid, acetic acid salt, boric acid, boric acid salt, or a mixture thereof.

8. The composition of claim 6, wherein the composition has pH less than about 4.

9. A method of reducing population of microorganism on an object, comprising contacting the object with a stabilized ester peroxycarboxylic acid composition, the composition comprising an ester peroxycarboxylic acid and C₂ or higher alcohol effective for stabilizing the ester peroxycarboxylic acid at non-toxic concentration of C₂ or higher alcohol.

10. The method of claim 9, wherein the object comprises a food product, a food processing surface, a health care surface, a plant product, a body or stream of water, a body or stream of gas, a hospitality sector surface, an industrial sector surface, an agricultural surface, a veterinary surface, or a combination thereof.

11. The method of claim 9, wherein the object comprises a hard surface.

12. The method of claim 9, wherein the object comprises an air stream.

13. The method of claim 9, wherein the object comprises an elastomer, a plastic, a woven substrate, a non-woven substrate, or a combination thereof.

14. The method of claim 9, wherein contacting comprises spraying the composition, immersing the object in the composition, foam or gel treating the object with the composition, or a combination thereof.

15. The method of claim 9, wherein the C₂ or higher alcohol comprises ethanol, isobutanol, isopropanol, n-propanol, n-butanol, tert-butanol, pentanol, glycerol, propylene glycol, butylene glycol, hexylene glycol, glycerine, polyethylene glycol, polypropylene glycol, polybutylene glycol, or a combination thereof.

16. The method of claim 9, wherein the composition comprises about 0.5 wt-% to about 30 wt-% C₂ or higher alcohol.

17. The method of claim 9, wherein the composition further comprises a surfactant.

18. The method of claim 14, wherein the surfactant comprises an alkylbenzene sulfonic acid, an amine oxide, an alkyl sulfonate, an aliphatic alcohol ethoxylate, or a mixture thereof.

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19. The method of claim 9, wherein the composition further comprises a buffer.

20. The method of claim 19, wherein the buffer comprises citric acid, citrate salt, phosphoric acid, phosphoric acid salt, succinic acid, succinic acid salt, adipic acid, adipic acid salt, glutaric acid, glutaric acid salt, acetic acid, acetic acid salt, boric acid, boric acid salt, or a mixture thereof.

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21. The method of claim 19, wherein the composition has pH less than about 5.

22. A method of stabilizing an ester peroxycarboxylic acid comprising formulating the ester peroxycarboxylic acid with C₂ or higher alcohol effective for stabilizing the ester peroxycarboxylic acid at non-toxic concentration of C₂ or higher alcohol to form a stabilized ester peroxycarboxylic acid composition.

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23. The method of claim 22, wherein the C₂ or higher alcohol comprises ethanol, isobutanol, isopropanol, n-propanol, n-butanol, tert-butanol, pentanol, glycerol, propylene glycol, butylene glycol, hexylene glycol, glycerine, polyethylene glycol, polypropylene glycol, polybutylene glycol, or a combination thereof.

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24. The method of claim 22, wherein the composition comprises about 2.0 wt-% to about 15 wt-% C₂ or higher alcohol.

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25. The method of claim 22, wherein the composition further comprises a surfactant.

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26. The method of claim 25, wherein the surfactant comprises an alkylbenzene sulfonic acid, an amine oxide, an alkyl sulfonate, an aliphatic alcohol ethoxylate, or a mixture thereof.

5 27. The method of claim 22, wherein the composition further comprises a buffer.

28. The method of claim 27, wherein the buffer comprises citric acid, citrate salt, phosphoric acid, phosphoric acid salt, succinic acid, succinic acid salt, adipic acid, adipic acid salt, glutaric acid, glutaric acid salt, acetic acid, acetic acid salt, boric acid, boric acid salt, or a mixture thereof.

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29. The method of claim 27, wherein the composition has pH less than about 7.